Motor Starting & Protection solutions for Ventilation System (UL)
Poultry and Livestock farming

Enhance the economic performance of your farm and ensure animal welfare with our Motor Starting & Protection solutions. A complete offering of coordinated products from a reliable supplier for safely starting and protecting ventilation systems in Poultry & Livestock farms.

What is a Ventilation System?
Poultry & Livestock farming needs dedicated ventilation control to ensure economic performance of the farm and animal welfare. By controlling the quality and temperature of the air, Ventilation Systems are now able to remove excess heat, moisture, dust, harmful gases, and odors from indoor farms, while diluting airborne disease organisms which could otherwise compromise animal welfare.

Why you need a Motor Starting & Protection solution for your Ventilation System
By safely starting, protecting and running the ventilation system, ABB Motor Starting and Protection solutions guarantee that the animals in Poultry & Livestock farms are provided with optimal air and hygiene conditions.

Main benefits

Continuous Operation
Even in simple electromechanical starter combinations, ABB solutions and coordinated products guarantee continuous operation of your ventilation system in any condition, while being reliable in all networks.

Energy-efficient system
Make your ventilation starter panel energy-efficient thanks to AF technology, which ensures 80% reduction in contactor coil consumption, less heat dissipation, a reduction in temperature rise and allows installation density in the panel to be increased.

Compact control panels
Save space in the control panel with our AF contactors and reduced-width electronic compact starters. Discover our ready-made starter connection kits ensuring compact design and safe connections.

 Ease of Installation
Cut control panel assembly time by up to 50% and achieve savings in labor costs, thereby reducing the total cost of the installation and time to market.
To ensure animal well-being in Livestock & Poultry farms you need to monitor and control many variables: Weight & Behaviour, Feed consumption, Water availability and consumption, Sound level, Body Temperature and Climate conditions.

It is essential to monitor and control the climate conditions in Poultry & Livestock farms if you want to ensure animal welfare and the economic performance of your farm. The ventilation system ensures that good aeration and the right temperature are always provided. It removes excess heat, moisture, dust, harmful gases and odors from the farms while diluting airborne disease organisms.

The most important controllable variables in Poultry & Livestock farms are:

- Water availability and consumption
- Climate conditions
- Feed consumption
- Sound level
- Weight & Behaviour
A mechanical ventilation system consists of fans, openings, heaters, and controls. Fans and openings (inlet or outlet) control the amount of air exchanged in a mechanical ventilation system. A typical mechanical ventilation system leverages on either an air supply system or an exhaust system. The most commonly used ventilation system in Poultry & Livestock farms is the negative pressure system, which is exhaust-based.

The exhaust fan(s) create(s) a slight negative pressure or vacuum in the poultry house, which causes air to enter the structure through specifically designed inlets. In this type of ventilation system, indoor air is continuously exhausted outside the building by fans installed on the walls.

There are two commonly used negative pressure systems, depending on how the farms are designed:
1. Tunnel ventilation system
2. Roof inlet/outlet ventilation system

The tunnel ventilation system is the most widely used ventilation system in large-scale poultry and livestock farms. The tunnel system varies depending on its layout, orientation, capacity, how the shed is built and various other things. Tunnel ventilation systems are rarely speed controlled since the on-off switching method using contactors is preferred. While this method is simple to understand and deploy, it is energy-intensive and minimum ventilation levels are difficult to control.

In roof inlet/outlet systems (VSDs) are used to control the fan speed in the inlet and outlet stacks employed for standard climate control. VSDs are the preferred choice for controlling ventilation in this equal pressure system since they enable the chickens to move freely between the house and the outside world.

In emergency situations, VSDs can enter the override mode, running fans to a chosen strategy and ignoring warnings and faults. This allows extended fan runtime in adverse conditions, enabling the layer houses to be safely evacuated.
Typical electrical distribution in Poultry & Livestock farms

The main distribution board supplies different subsystems inside poultry and livestock farms. The figure below illustrates a typical electrical distribution system for Poultry & Livestock farms, from grid/generator power sources (renewable energy sources can also be connected) to the main distribution board.

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**Fans**

The most important components in a ventilation system are fans. A fan is a powered machine that creates a flow of air. It consists of a rotating assembly of vanes or blades, generally made of wood, plastic or metal, which act on the air. This rotating assembly of blades and hubs is known as an impeller, rotor, or runner. It is usually housed in some form of enclosure, or case, and is driven by an electric motor.

There are three main types of fans used for moving air: axial, centrifugal (radial), and cross-flow (tangential), but axial types are the most commonly used in Poultry & Livestock farms.
The ventilation system’s typical fan rating is below 40A. If the rating is below 40A and the fans are designed for a full-speed running considering the constant airflow pressure inside the Poultry & Livestock farms, our recommended starter type is a Direct-on-line starter or Softstarter.

If an adjustable airflow pressure inside the farms is needed, then it is recommended to use a variable frequency drive to accurately control the speed of inlet and outlet fans.

**Recommended starter for ventilation fan control**

![Diagram of Direct-on-line starter](image1.png)

![Diagram of Softstarter starter](image2.png)

![Diagram of VFD starter](image3.png)

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**Design data requirements for fans**

**Main functions**
- Short-circuit protection
- Overload protection (with adjustable current setting)
- Voltage level monitoring
- Phase loss & phase sequence – for correct management of fan operation
- Ground fault protection

**Other functions**
- Temperature monitoring in house
- Thermistor protection relay for monitoring winding temperature (based on fan design)
- Locked Rotor Protection - in the case of a jammed fan
- Digital connectivity (control, energy measurements, etc...)
- Safety relays (if required, based on design)

**Fan starter panel design parameters**
- Motor rated voltage
- Motor rated current
- Utilization category (AC-3/3e)
- Maximum operating current
- Number of switching cycles (ON/OFF)
- Starting torque depending on fan type
- Acceleration time (starting time)
- Control voltage
- Ambient temperature
- Altitude
- Enclosure type
- Starter type
- Operations - Auto/Manual & Local/Remote
- Digital connectivity (control/monitor)
Motor Starting and Protection solutions for Ventilation Systems in Poultry & Livestock farms

Discover our Motor Starting and Protection solutions for Ventilation Systems. They always ensure the right amount of air is provided for animal welfare.

Essential Solution | Get the essentials right with fast and reliable installations
The Essential Solution ensures that combinations of core power devices function in a coordinated way, thereby guaranteeing continuous operation and ease of installation. In addition, the Essential Solution typically covers the requirements of standalone machinery like pumps, compressors, fans, etc.

Enhanced Solution | Get going with our robust protection offering featuring enhanced safety, control and monitoring functions
The Enhanced Solution provides enhanced control, safety, and monitoring functions for applications in the discrete automation field. The Enhanced Solution for Ventilation Systems in Poultry & Livestock farms includes additional protection functions like temperature monitoring, the thermistor motor protection relay, under- or over-voltage monitoring relay, safety relays and more besides. We can address any other requirements to suit end-user requests.

Advanced Solution | Get ahead with smart data and predictive applications to keep your system running
The Advanced solution for Ventilation systems includes integrated and future-ready motor protection, flexible motor control, fault diagnostics, maintenance schedules and supports all major communication protocols.

The table below provides an overview of the possible functions in different solution offerings for ventilation systems in Poultry & Livestock farms.

<table>
<thead>
<tr>
<th>Solution level</th>
<th>Basic protection functions</th>
<th>Monitoring of additional protection functions</th>
<th>Digital connectivity and cloud monitoring</th>
</tr>
</thead>
<tbody>
<tr>
<td>Essential</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Enhanced</td>
<td>● ●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Advanced</td>
<td>● ● ●</td>
<td>●</td>
<td>●</td>
</tr>
</tbody>
</table>
ABBA's Essential Solution for starting a fan

Fuseless protection with MMS
for motor rating 3/4 hp up to 60 hp

Softstarter with MMS
for motor rating 2 hp up to 75 hp

3 phase system, 480V AC, 60Hz

MCCB Tmax XT

E 92/30 CC Fuse holder

Control transformer

MCB ST200 M C (UL1077)

Emergency stop

Hand/Auto control

Switch ON Push button

Switch OFF Push button

Livestock farm ambient temperature sensor

Fan ON Status

Fan OFF Status

Fan

Fan

Fan

Fan

*The enclosed safety switch will be close to the motor in case the fan needs maintenance to isolate the power supply and to ensure safety for a person working close to that pump.

The table below provides an overview of the difference between the combination products offered in the Essential Solution for Ventilation systems in Poultry & Livestock farms.

<table>
<thead>
<tr>
<th>Product combination</th>
<th>Motor rating supports</th>
<th>Key Differentiator</th>
</tr>
</thead>
<tbody>
<tr>
<td>B Mini Contactor</td>
<td>up to 5 hp</td>
<td>For efficient and spacing saving</td>
</tr>
<tr>
<td>Contactor + MMS (Push-In Spring)</td>
<td>up to 25 hp</td>
<td>For reliable connection, faster, and easier wiring and vibration proof</td>
</tr>
<tr>
<td>Contactor + MMS (Screw version)</td>
<td>up to 60 hp</td>
<td>For standard offerings</td>
</tr>
<tr>
<td>PSR + MMS (Softstarter)</td>
<td>up to 75 hp</td>
<td>For Smooth start and stop</td>
</tr>
</tbody>
</table>

Notes:
MMS - Manual Motor starter
ABB’s Enhanced Solution for starting a fan

3 phase system, 480V AC, 60Hz

MCCB Tmax XT

EOT Enclosed Rotary Switch

Enclosed safety Switch

MCCB Ekip Dip I

OS switch fuse unit

AF Contactor

Optional AF contactor

Sentry safety relay

AFS contactor

AFS contactor

Power circuit

Control circuit
ABB’s Advanced Solution for control and monitoring a fan
(for motor rating up to 1800 hp at 480V AC)

3 phase system, 480V AC, 60 Hz

MCCB
Tmax XT
TMF/TMA

E 92/30 CC
Fuse holder

Control transformer

MCB ST20M C
(UL1077)

Emergency stop

Hand/Auto control

Dip I ON Status
Fan OFF Status

Motor Controller
UHC100.3

Optional
AF contactor

AF contactors

Power circuit

Control circuit

3 phase system,
480V AC, 60 Hz

Tmax XT Ekip
M

Tmax XT Ekip M
Touch LRIU

MMS
MO165

Motor Controller
UHC100.3

Optional
AF contactor

AF contactors

AF contactor

PSTX
softstarter

Enclosed safety Switch

Enclosed safety Switch

Enclosed safety Switch

Fan

Fan

Fan

Temperature monitoring relay

Livestock farm ambient temperature sensor

Switch ON
Push button

Switch OFF
Push button

Notes:
1800 hp for Softstarter connected in inside delta

1800 hp for Softstarter connected in inside delta
ABB’s advanced enclosed solution for control and monitoring a fan
(for motor rating up to 1000 hp at 440/480V AC)

- UL 508A
- Operational voltage: 480 V AC
- Rated operational HP: 20 – 1000HP
- UL 3-wire service entrance rating up to 700HP
- NEMA Type: 12, 3R and 4 enclosure
- Operational voltage: 480 V AC
- AC-3 Rated Bypass for Emergency Starting in PSTX-XD version
- Door mounted HMI and pilot devices include
Digital offering

A smart ventilation system in poultry and livestock farming guarantees fresh air quality inside the farms and removes harmful gases, without any manual supervision of the ventilation system. ABB’s Advanced starter solution provides complete control and monitoring of all the important parameters to optimize animal welfare and maintain healthy poultry and livestock farms.

- Digitalization allows flexible remote control of ventilation fans
- 100% availability of measurement data of the ventilation fans to detect problems early and help in predictive maintenance
- Cloud connectivity through ABB Ability™ Energy and Asset Manager, with data always quickly available on the web applications
1st scenario:
**Digital offering with softstarter for control and monitor the fan**
For motor rating up to 1800 hp at 480V AC

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**Supporting communication protocols**

**Industrial Ethernet**
- Ethernet/IP™ (2-port)
- Modbus TCP (2-port)Profinet (2-port)
- EtherCAT
- BACnet MS/TP

**Fieldbus**
- Modbus RTU
- DeviceNet™
- Profibus DP

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**Features**
- Flexible ventilation fan control (remote or local)
- Advanced protection functions
- Status and fault diagnosis
- Monitoring of all electrical parameters
  - Voltage (V)
  - Current (A)
  - Power factor (Cos phi)
  - Active power (kW)
  - Reactive power (KVAR)
  - Apparent power (kVArh)
  - Main frequency (Hz)
  - Total Harmonics distortion (THD)
  - Consumed Energy in kWh
  - Motor temperature

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Notes:
*1800hp for Softstarter connected in inside delta
2nd scenario:
Digital offering with UMC100.3 for control and monitor the fan with cloud connectivity
For motor rating up to 850A at 480V AC

Supporting communication protocols

**Industrial Ethernet**
- Ethernet/IP™
- Profinet IO
- Profinet (S2)
- Modbus TCP

**Fieldbus**
- Modbus RTU
- DeviceNet™
- Profinbus DP

Features
- Flexible ventilation fan control (remote or local)
- Advanced protection functions
- Status and fault diagnosis
- Monitoring of all electrical parameters:
  - Voltage (V)
  - Current (A)
  - Power factor (Cos phi)
  - Active power (kW)
  - Reactive power (KVAR)
  - Total Harmonics distortion (THD)
  - Active energy (kWh)
  - Temperature
- Cloud connectivity - ABB Ability Energy & Asset Manager

Note:
*UMC100.3 supports ABB ability through MTQ22 (Modbus TCP)*
3rd scenario:

**Digital offering with Tmax XT MCCB for control and monitor the fan with cloud connectivity**

For motor rating up to 1200A at 480V AC

**Supporting communication protocols**

**Fieldbus networks**
- Modbus RTU
- Profinet
- DeviceNet™

**Ethernet networks**
- Modbus TCP
- Ethernet/IP™
- IEC 61850

**Features**
- Flexible ventilation fan control (remote or local)
- Advanced protection functions
- Status and fault diagnosis
- Monitoring of all electrical parameters
  - Voltage (V)
  - Current (A)
  - Power factor (Cos phi)
  - Active power (kW)
  - Apparent power (kVA)
  - Reactive power (kVAR)
  - Total Harmonics distortion (THD)
  - Active energy (kWh)
  - Reactive energy (kVARh)
  - Temperature (with Ekip 3T)
- Cloud connectivity - ABB Ability Energy & Asset Manager
Key benefits of offered products

Reliable in all networks

The electronic system within the AF contactor continuously monitors the current and voltage applied to the coil. The contactor is safely operated in an always-optimized, hum-free condition.

AC & DC control voltage

Thanks to AF technology, the same contactor can be used for both AC and DC control. This makes it easier to choose the type of contactor and reduces the number of parts to keep in stock.

Wide control voltage range

The AF contactor ensures steady operation in unstable networks and signifies a major advancement in motor control and power switching, with no threat of voltage sags, dips, or surges. Prevents stoppages caused by voltage fluctuations.

Troubleshooting made easy

Separate thermal and magnetic trip indication makes troubleshooting a lot easier and faster and reduces downtime. This allows you to easily take action based on thermal or magnetic tripping.

Built-in Surge suppressor

Conventional contactor technology normally requires an external surge suppressor. With AF contactor technology, surges are handled by a built-in contactor and never reach the control circuit. One less product required and no need to worry about complications causing electronics near contactors to fail.

Reduced coil consumption

Thanks to AF technology contactor coil consumption is reduced by 80%, thus less heat dissipation and reduced temperature rise. This allows increased installation density in the panel, reduced control transformer rating, reduced control panel footprint and cost savings.

Busbar connectors for group assembly

Three-phase busbars ensure rapid, safe connection and are therefore a cost-effective solution. In addition, up to 5 manual motor starters can be fitted next to each other with optional spacing for auxiliary contacts.

Easy to connect

Save wiring time and avoid mistakes by using a connecting link between ABB manual motor starters and soft starters or contactors. This creates harmonious and compact starter combinations that are easy to mount.

Ready for Premium efficiency / super premium efficiency

ABB’s portfolio matches the latest requirements for NEMA premium efficiency and super premium efficiency single-speed motor applications. ABB offers motor protection and control equipment that has been validated for use with Premium Efficiency/Super Premium Efficiency motors. The results of these tests can be found in ABB’s motor co-ordination tables.
ABB’s portfolio matches the latest requirements for NEMA premium efficiency and super premium efficiency single-speed motor applications. ABB offers motor protection and control equipment that has been validated for use with Premium Efficiency/Super Premium Efficiency motors. The results of these tests can be found in ABB’s motor co-ordination tables.

**Motor heating option in softstarters**
- Keep your motor running reliably even in cold and damp environments.
- Removes condensation from idle motors.
- Prevents the motor from freezing.
- Perfect for damp installations and cold environments.

**PT100 input for motor protection**
The Softstarter has a 3-wire PT100 input. The trip temperature is set by the user. The highest trip temperature is 250° while the lowest is -25°. PT100 measurement accuracy must be +/- 3° with 3 wires measuring if the 3 connecting cables have the same resistance.

**Limp mode in softstarters**
Plan stops for increased productivity.
- Keep running even when one thyristor has shorted.
- Service your plant when you have the time.
- Protections and main features continue to function.

**Flexible soft logic possible with UMC100.3**
Flexible in creating the soft logic for switching ON the motor based on temperature monitoring input.

**PT100, PTC**

**Detachable keypad**
Control your process and softstarter safely with detachable keypad that makes safe installation possible and there is no need to buy accessories, thus cost savings for the customer.

**Coated PCBA**
Longer lifetime and enhanced reliability for your Softstarter, thereby reducing the risk of unwanted stops. This is a standard feature for PSE and PSTX, so there is no risk of ordering a unit without coated PCBAs and no additional cost.

**Harmonized range of accessories**
MMS up to 80 A share the same main accessories like auxiliary contacts, signaling contacts, shunt trips and undervoltage releases. This significantly reduces the part list and makes selection of the right accessories easy.

**Tested Co-ordination tables**
ABB offers coordinated products to ensure the highest availability and protection for the installation. More than 1,800 tested and validated coordination tables are available in the SOC tool, so you can quickly and easily choose the right ABB solution.

**Easy to connect**
Keep your motor running reliably even in cold and damp environments.
- Removes condensation from idle motors.
- Prevents the motor from freezing.
- Perfect for damp installations and cold environments.

**Plan stops for increased productivity.**
- Keep running even when one thyristor has shorted.
- Service your plant when you have the time.
- Protections and main features continue to function.

**Tested Co-ordination tables**

<table>
<thead>
<tr>
<th>Coordination Table</th>
<th>Customer Code</th>
<th>Source</th>
<th>Shortest Latency</th>
<th>Longest Latency</th>
<th>Shortest Latency</th>
<th>Longest Latency</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1000</td>
<td>ABB</td>
<td>100</td>
<td>200</td>
<td>150</td>
<td>300</td>
</tr>
<tr>
<td>2</td>
<td>2000</td>
<td>ABB</td>
<td>200</td>
<td>300</td>
<td>250</td>
<td>500</td>
</tr>
<tr>
<td>3</td>
<td>3000</td>
<td>ABB</td>
<td>300</td>
<td>400</td>
<td>350</td>
<td>700</td>
</tr>
</tbody>
</table>

**Detachable keypad**

**Flexible soft logic possible with UMC100.3**

**Coated PCBA**

**Motor heating option in softstarters**

**PT100 input for motor protection**

**Limp mode in softstarters**

**Harmonized range of accessories**

**Tested Co-ordination tables**
# Bill of material

## Motor starting and protection for ventilation system - Enhanced level

List of parameters that were taken into consideration for the development of the bill of materials:

<table>
<thead>
<tr>
<th>Standard</th>
<th>UL</th>
</tr>
</thead>
<tbody>
<tr>
<td>System Design</td>
<td>Main Voltage 480 V AC, 3 phase, 60 Hz, 65kA, control voltage -120V AC</td>
</tr>
<tr>
<td>Starter type</td>
<td>Ventilation fan: Direct-online starter with standard screw solution</td>
</tr>
<tr>
<td>UL - CMC Type</td>
<td>Type-D</td>
</tr>
<tr>
<td>System Power</td>
<td>1x fan -5 hP (7.6 A FLA)</td>
</tr>
</tbody>
</table>

### Products for Power Circuit

<table>
<thead>
<tr>
<th>Product notes</th>
<th>Part Number</th>
<th>US product code</th>
<th>Description</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motor circuit protector</td>
<td>1SDA074884R1</td>
<td>XT2HU3025AFF000XXX</td>
<td>XT2H 125 T MF 25 - 400</td>
<td>1</td>
</tr>
<tr>
<td>Contactor</td>
<td>1SBL137001R1310</td>
<td>AF09-30-10-13</td>
<td>AF09-30-10-13 100-250V50/60HZ-DC Contactor</td>
<td>1</td>
</tr>
<tr>
<td>PI SIDE AUX INO1INC AF09K-96K/NF</td>
<td>1SBN010120R1011</td>
<td>CAL4-11</td>
<td>CAL4-11 INO + INC side auxiliary block</td>
<td>1</td>
</tr>
<tr>
<td>Thermal overload relay</td>
<td>1SAZ72120R1040</td>
<td>TF42-7.6</td>
<td>TF42-7.6 current range 5.7 - 7.6A</td>
<td>1</td>
</tr>
<tr>
<td>3P, 16A enclosed Disconnect Switch</td>
<td>1SCA022792R2700</td>
<td>EOT16U3P3-S</td>
<td>EOT16U3M1-S</td>
<td>1</td>
</tr>
</tbody>
</table>

### Products for control Circuit

<table>
<thead>
<tr>
<th>Product notes</th>
<th>Part Number</th>
<th>US product code</th>
<th>Description</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>3P, 25A TMF MCCB for main incomer</td>
<td>1SDA074791R1</td>
<td>XT2HU3025AFF000XXX</td>
<td>XT2H 125 T MF 25 - 400</td>
<td>1</td>
</tr>
<tr>
<td>E90 CLASS CC FH 2P 30A</td>
<td>2C5M2999912R1801</td>
<td>E92/30CC</td>
<td>E92/30 CC Fuse holder</td>
<td>1</td>
</tr>
<tr>
<td>Fuse, type CC, 600V, 2A</td>
<td>Not provided by ABB</td>
<td>Example: Bussmann KTK-R-2, LP-CC-2</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>480:120 1 ph, 200VA.</td>
<td>9T58K2806</td>
<td>9T58K2806</td>
<td>Single-phase, fully-encapsulated design 200VA input voltage 240x480 Volts &amp; output voltage 120 / 240V</td>
<td>1</td>
</tr>
<tr>
<td>ST201M-C2NA Miniature Circuit Breaker</td>
<td>2CDS271335R0024</td>
<td>ST201M-C2NA</td>
<td>ST201M-C2NA Miniature Circuit Breaker - 2P - C - 2 A</td>
<td>1</td>
</tr>
<tr>
<td>CM-MP5.353 three-phase MON.</td>
<td>1SVR750487R8300</td>
<td>1SVR750487R8300</td>
<td>CM-MPN. 525 Three-phase monitoring relay 2c/o, 0.1-30s, L1-L2-L3=3x350-580VAC</td>
<td>1</td>
</tr>
<tr>
<td>E90 CLASS CC FH 3P 30A for voltage monitoring relay</td>
<td>2C5M299932R1801</td>
<td>E93/30CC</td>
<td>E93/30CC</td>
<td>1</td>
</tr>
<tr>
<td>Fuse, type CC, 600V, 1A</td>
<td>Not Available in ABB</td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>CM-MSS.13S thermostor relay</td>
<td>1SVR737040R0030</td>
<td>1SVR737040R0030</td>
<td>CM-TCS.13S Temperature monitoring relay Temp.-range 0…+200°C, 24-240V/DC</td>
<td>1</td>
</tr>
</tbody>
</table>

### Products for command and signalling

<table>
<thead>
<tr>
<th>Product notes</th>
<th>Part Number</th>
<th>US product code</th>
<th>Description</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>PILOT LIGHT CL2 RED 110-130V AC</td>
<td>1SAFA619403R5131</td>
<td>CL2-513R</td>
<td>CL2-513R</td>
<td>1</td>
</tr>
<tr>
<td>PILOT LIGHT CL2 GREEN 110-130V AC</td>
<td>1SAFA619403R5132</td>
<td>CL2-513G</td>
<td>CL2-513G</td>
<td>1</td>
</tr>
<tr>
<td>PILOT LIGHT CL2 YELLOW 110-130V AC</td>
<td>1SAFA619403R5133</td>
<td>CL2-513Y</td>
<td>CL2-513Y</td>
<td>1</td>
</tr>
<tr>
<td>40MM TW-REL RED, 1 NC</td>
<td>1SAFA619550R1041</td>
<td>CE4T-10R-01</td>
<td>CE4T-10R-01</td>
<td>1</td>
</tr>
<tr>
<td>SELECTR 2 POS. MAINT. BLACK INO</td>
<td>1SAFA619200R1016</td>
<td>C2S51-10B-10</td>
<td>C2S51-10B-10</td>
<td>1</td>
</tr>
<tr>
<td>COMPACT FLUSH PB MOM. RED, 1NC</td>
<td>1SAFA619100R1041</td>
<td>C1P-10R-01</td>
<td>C1P-10R-01</td>
<td>1</td>
</tr>
<tr>
<td>COMPACT FLUSH PB MOM. GREEN INO</td>
<td>1SAFA619100R1012</td>
<td>C1P-10G-10</td>
<td>C1P-10G-10</td>
<td>1</td>
</tr>
<tr>
<td>Interface relay 4 c/o</td>
<td>1SVR405601R2000</td>
<td>1SVR405601R2000</td>
<td>CR-P120AC2</td>
<td>1</td>
</tr>
<tr>
<td>Interface relay - socket</td>
<td>1SVR405650R1000</td>
<td>1SVR405650R1000</td>
<td>CR-PSS</td>
<td>1</td>
</tr>
<tr>
<td>Accessories for pilot devices</td>
<td>SK61555-44</td>
<td>SK 615 550-44</td>
<td>Legend plate &quot;Start&quot;, 22mm</td>
<td>1</td>
</tr>
<tr>
<td>Accessories for pilot devices</td>
<td>SK61555-31</td>
<td>SK 615 552-31</td>
<td>Legend plate &quot;Stop&quot;, 22mm</td>
<td>1</td>
</tr>
<tr>
<td>Accessories for pilot devices</td>
<td>SK61555-21</td>
<td>SK 615 552-21</td>
<td>Legend plate &quot;Off&quot;, 22mm</td>
<td>1</td>
</tr>
<tr>
<td>Accessories for pilot devices</td>
<td>SK61555-22</td>
<td>SK 615 552-22</td>
<td>Legend plate &quot;On&quot;, 22mm</td>
<td>1</td>
</tr>
<tr>
<td>Accessories for pilot devices</td>
<td>CA6-1026</td>
<td>Not in SAPT</td>
<td>Legend plate, black on yellow aluminum, &quot;Emergency stop&quot;</td>
<td>1</td>
</tr>
</tbody>
</table>

Note: Feeder circuit breaker rating may change if additional loads are connected.
Product offering

Contactors:

Manual motor starters:

Push-In Spring Motor Starting solution:

Softstarters:

Electronic compact starter:

Intelligent Motor controller UMC100.3:

Three phase monitoring relays:

Pluggable Interface Relays:

Primary switched mode power supplies:

Time relays:
ABB Ability™ Energy and Asset Manager is a state-of-the-art cloud solution that integrates energy and asset management in a single intuitive dashboard.

- Temperature monitoring relay:
- Tmax XT:
- Switch Fuse Units & Switch Disconnectors:
- Safety relays:
- System pro M compact - MCB:
- Pilot devices:
- Enclosed safety switch:
- Enclosed Rotary switch (EOT series):
- Enclosed Softstarter solution (only for US market):